

## THE RAL SPRING SITE

The Ral Spring is Number 14 in the Hot Springs National Park numerical sequence. The spring was active during the early 1880's and was used especially for the soaking of feet. Reputedly, the water of Ral Spring was effective in the treatment of corns and rheumatism of the feet. Existent photographs reveal that the facilities at Ral spring were quite simple, consisting of planks or boards placed around the perimeter of the shallow pool on four sides. The rectangular area of water delimited by the boards seems to <sup>HAVE BEEN</sup> ~~be~~ about six feet by three and one half to four feet. Men utilized the thermal waters in the mornings, and ladies used the location in the afternoons. The photographs show four upright poles to which were lashed four horizontal poles at a height of perhaps five feet. One illustration reveals that a sheet or canvas was placed over this framework to exclude intense sunlight. Those shown soaking their feet were fully and well dressed except for shoes. The latter may be seen adjacent to the pool of water on the ground or upon the boards.

This writer was unable to find the exact date when the Ral Spring, also called the "Corn Hole Spring," went dry. Presumably this was in the mid or late 1880's. It is possible that the spring ceased flowing when extensive digging to open lower springs caused a shift of the water table.

The site of the Ral Spring is located just east of the notable tufa deposit which is adjacent to a paved trail east and above the Grand Promenade. In recent years vegetation has started to encroach upon the tufa deposit, and the maintenance Department of the Park planted a small tree in the center of the spring collecting pool area several years ago. This tree was removed by the Chief of Interpretation since he felt that it would damage the site. At the same time most of the grass and other vegetation was removed from the tufa to prevent damage by root penetration and plant acids.

### Reason for Excavation

As a part of its interpretive program, the Hot Springs National Park decided to check into the feasibility of reactivating the Ral Spring so visitors could see what this primitive facility was like during the 1880's. It was also felt that artifacts might have fallen into the spring collecting pool and might be recovered.

The latter could be employed in interpretive exhibits. Because of his familiarity with the springs and local geology, plus his experience in archeology, the writer was contacted in January of 1983 regarding the possibility of excavating the Ral Spring. Arrangements for this excavation were made, and the actual field work was done between March 8 and March 18, 1983.

### Methodology and Personnel

Before excavation started, the site was photographed to show how it appeared in March of 1983. A permanent Datum Point was established on a rock ledge just above the 674 foot contour line to the east of the site. A Secondary Datum Point (designated in notes as D/2) was placed at the 668 foot contour interval. The latter reference point was 18 feet and 9 inches west of Primary Datum and 80 inches lower down the hillside. The level of Secondary Datum was used as a datum plane for vertical measurements, although measurements from the surface were also recorded in the field notes.

The excavation procedure was to trowel carefully all matrix to find specimens in situ if possible. A screen was available, but the matrix was either too wet or too hard to screen effectively. Some of the very firm ferric tufa in the center of the old collection pool had to be broken up with a small mattock.

Due to the fact that we were working beside a high traffic area, it was decided not to place conspicuous stakes and lines as are traditionally used at archeological excavations. The writer also declined to use the ropes and barricades offered by the Maintenance Department. Small steel pins placed flush with the surface of the ground were used to delimit the subunits into which the small site was divided. By keeping a "low profile" the excavation was not disturbed by anyone in spite of the fact that hundreds of people passed by it every day.

Personnel involved consisted of the writer and two volunteers: Mr. Harold Patterson and Ms. Mildred Grissom. Several people from the Maintenance Department assisted in obtaining needed equipment, such as a wheelbarrow, Cushman vehicle for hauling away spoil dirt, additional shovels, and a broom. Personnel from Enforcement checked on the site frequently to help prevent possible vandalism, and the Chief Interpreter, Mr. Earl Adams, made many arrangements to facilitate the excavations. The Park Superintendent, Mr. Roger

Giddings, visited the site almost daily and demonstrated much interest in the work being undertaken.

### Summary of Important Findings

Apparently, small footings for the planks upon which people sat were made of damaged bricks, small stones, and a poor grade lime and sand mortar. One intact footing at the southwest corner of the reservoir was about 16 inches square. Half bricks and a few stones had been cemented together, although the mortar was in a very poor condition in March of 1983. Boards were secured via large hand-made square spike nails, three of which were closely associated with the extant footing at the southwest corner of the pool area. ~~Four~~<sup>THREE</sup> other square nails were encountered elsewhere in the excavation. Two of these were located about where the boards would have crossed on the southeast margin of the pool area. The position of one of the nails suggested that the planks had rotted in place after the spring had gone dry.

Other artifacts included a rimsherd from a poor grade porcelain or fine grade stoneware cup or mug. This was found in the pool basin near the disturbed north margin. The sherd is roughly triangular in shape and features a thinned rim. One iron object was recovered from the east margin of the pool area, but this specimen has not been identified. It seems to be a fastening device of some kind.

Only eight artifacts were found other than many fragments of brick (mostly in a disturbed area). Excavation of the collecting basin revealed the reason for this paucity of artifacts: the pool was quite shallow, being between six inches and eighteen inches in depth, so any item which fell into the pool could be recovered easily. The bottom of the foot-soaking basin was clearly definable except where the intrusive pit of feature 4 existed. Apparently only about one foot of the basin was removed along the north margin by feature 4.

Feature 1, an arrangement of brick fragments and small stones was originally thought to represent the scattered remains of a footing unit. While it may have been part of one originally, the area was disturbed by the large excavation for feature 4. Feature 2, the intact footing unit, was described above. Feature 3, a square area of brownish topsoil, 16 by 17 inches in size and 7½ inches deep, proved to be an enigma. Possibly it represents a wooden

box without a top which became filled with topsoil before the sides deteriorated. In one photograph someone is sitting at about the place where the stain was found.

Feature 4, a large underground reservoir for thermal water, was opened and sketched. No one in the park today was aware of its existence. This interesting feature, described in detail in the field notes, was nine feet four inches long, about 30 inches wide on an average, and was over ten feet deep in places. The sides, above the three foot level generally, were composed of brick which formed an arch overhead. Three feet north of the south end of the reservoir a reinforcement arch extended downward into the reservoir a maximum of 11½ inches. It was made of bricks and was 8½ inches wide. A 3/4 inch feeder pipe was located eight inches south of this arch and about two feet underground (near the top of the reservoir). This pipe sloped downward, reflecting an uphill origin. Two drainage pipes went five feet north of the north extremity of the reservoir and turned west (or downhill) at this point. The reservoir was in good condition generally, although some exfoliation of the matrix had taken place at the southwest margin of the feature...allowing a few bricks from the lowest row to fall. These are in a pile at the bottom of the feature.

The nature of the sedimentary carbonate and ferric tufa, as well as the position of deposition, allowed one to see that the spring actually existed well to the east of the collection pool. This seems logical, because if the water were 143 degrees, the usual temperature at which it emerges from the ground, I doubt if people would have enjoyed soaking feet in it. Apparently the water flowed just under the surface into the collection pool. It probably cooled somewhat during this flow.

#### INTERPRETATION

The archeological evidence confirmed the presence of boards or planks for seating and added the information that they were nailed together with large square (hand-made) spikes. One of these spikes had a bent tip, caused by contact with the brick footing. The positions of the nails suggested that several sets of planks had been used during the life of the spring. This is confirmed by existing photographs.

Several patrons of the pool were drinking thermal water from metal utensils according to the available photographs. One can also

add that some drank from porcelain or stoneware cups or mugs, as the one sherd suggests. The pool was kept remarkably clean, possibly to prevent injury to feet being soaked.

Although the Ral Spring seemed to have dried up rather quickly, the evidence indicates that a mild seeping of water continued to flow into the basin area. This carried large amounts of iron which formed a ferric tufa. Several samples of this, which ranged from orange and black to black with white calcite or carbonate inclusions, were stored in the park curatorial space. Generally the carbonates were deposited before they reached the collecting pool area. Samples of these white to gray soft deposits were also collected. The basin which contained thermal water in the 1880's had completely filled with ferric tufa within the last 100 years.

Sometime after the spring stopped flowing, probably between the years of 1890 and 1910, a large storage reservoir was excavated just north of the old Ral Spring. The excavation for this feature disturbed the north foot of the collecting pool. Apparently the spring which fed the reservoir also dried up and the sealed reservoir was forgotten until it was encountered in the 1983 investigations.

#### Recommendations

In order to reactivate the Ral Spring as an interpretive exhibit it would be necessary to form a basin which would hold water. As it is today, water would simply drain into the old storage reservoir. It is recommended that a concrete basin be used to hold water. This should conform to the contours of the old reservoir or basin. Footings for planks could be reconstructed from brick halves and small stones. Only, for durability, I would recommend that the footings extend downward into the tufa at least 8 inches (with the same elevation above the tufa as before). Anchor bolts could be embedded into the concrete and holes be bored into the two-inch planks so the top of the bolt would be counter-sunk in the top plank. This would be more substantial than nails, and damaged planks could be replaced easily. Water would probably have to be piped to the location from one of the higher springs, or from the Cave Spring if it is still active. A small retaining wall

might be erected to the east of the spring to prevent erosion and encroachment of plants into the site area. The thermal water could flow from this wall in a shallow rock-lined (tufa lined?) ditch and into the reconstructed pool of water. A canopy similar to the one shown in the photographs might also be erected.

A more detailed account of recommendations, with sketches, is being submitted to the Superintendent. It is felt that reactivation of the Ral Spring site would be of great interest to the visiting public. It would be an inexpensive and easily maintained interpretive exhibit. In addition it would stabilize the excellent tufa deposit, which, in itself, is an important interpretive feature.

## EXCAVATION RECORD - LEVEL REPORT

# 2

Level 1 Units A-F Area \_\_\_\_\_ Site No. RAL SPRING 14  
Date started MARCH 8, 1983 Date finished MARCH 10, 1983  
Excavation depth B.S. at SE stake 5" SW 0" NW 0 NE 6"  
Excavation depth B.D. at SE stake 14" SW 27" NW 24" NE 17"  
Excavation technique MATRIX Carefully Troweled

Screened No Mesh size \_\_\_\_\_ Floor & walls troweled Yes  
Features present or indicated F-1, F-2, F-3, F-4

Floor & wall feature forms properly filled out Yes  
Nature of matrix A MEDIUM BROWN TOPSOIL WITH A FEW ROCKS. Sample taken yes

Artifacts recovered: (CN = catalog number, D = description)

CN <u>1</u> D <u>SQUARE Nail</u>	CN _____ D _____
CN <u>2</u> D <u>SQUARE Nail</u>	CN _____ D _____
CN <u>3</u> D <u>SQUARE Nail</u>	CN _____ D _____
CN <u>4</u> D <u>SQUARE Nail</u>	CN _____ D _____
CN <u>5</u> D <u>SQUARE Nail</u>	CN _____ D _____
CN <u>7</u> D <u>SQUARE Nail</u>	CN _____ D _____
CN <u>6</u> D <u>IRON OBJECT</u>	CN _____ D _____

Debitage or debris collected MANY BRICK FRAGMENTS

Debitage or debris not collected (indicate amounts) ABOUT 30  
PIECES OF LOOSE TUFA and EIGHT SANDSTONE  
FRAGMENTS.

Debitage sacks (circle one) 1 2 (3) 4 5 6 7 8 9  
C-14 sample collected No <sup>soil</sup> Pollen sample taken Yes  
Flotation No Percentage of level \_\_\_\_\_ Photos taken Yes  
Excavators DICKSON, PATTERSON

Remarks: MATRIX SEEMS DISTURBED AT THE NORTH END OF  
SUBUNIT B. MANY BRICK FRAGMENTS AND A FEW SANDSTONE  
ROCKS IN THE NORTH QUARTER OF SUBUNIT B AND IN  
THE SOUTH PART OF SUBUNIT C. THE WEST MARGINS OF  
SUBUNITS D, E, & F are THE TUFA SURFACE.

10-14"  $\frac{BD}{2}$

24-27"  $\frac{BD}{2}$  A  
WEST MARGIN  
UNITS D, E, F.

Floor sketch of level 1 at depth of AT EAST EDGE

Unit size \_\_\_\_\_ Scale 9"

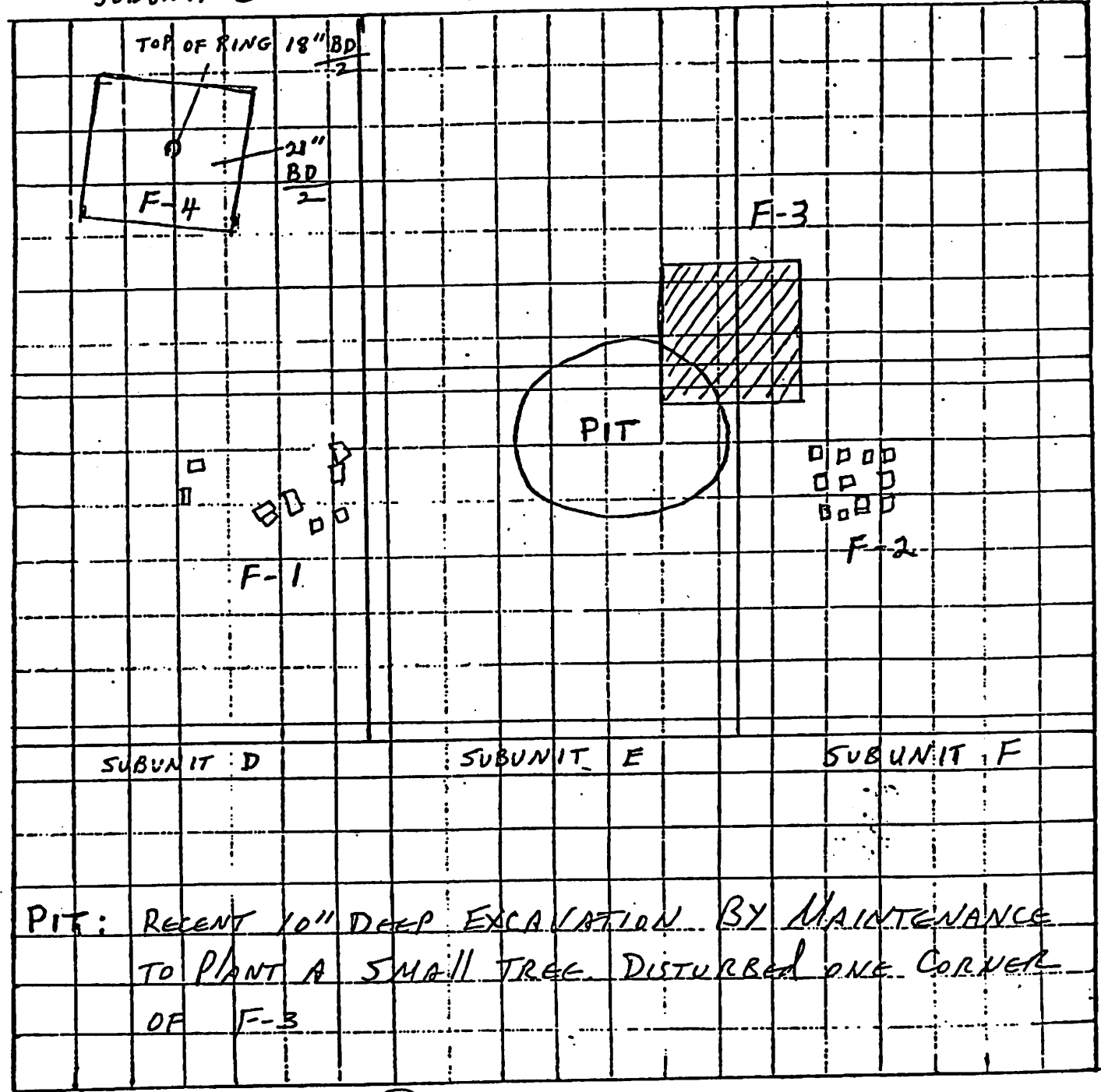
Record continuation form used No

EAST

SUBUNIT C

SUBUNIT B

SUBUNIT A



PIT: RECENT 10" DEEP EXCAVATION BY MAINTENANCE TO PLANT A SMALL TREE. DISTURBED ONE CORNER OF F-3

Recorded by Jim R. Dickson Supervisor's approval \_\_\_\_\_



## EXCAVATION RECORD - LEVEL REPORT

# 2

Level 2 Units A-F Area \_\_\_\_\_ Site No. RA1 SPRING 14  
Date started MARCH 10, 1983 Date finished MARCH 16, 1983  
Excavation depth B.S. at SE stake 5" SW 0 NW 0 NE 21"  
Excavation depth B.D. at SE stake 14" SW 27" NW 24" NE 27"  
Excavation technique MATRIX Carefully Troweled.

Screened No Mesh size \_\_\_\_\_ Floor & walls troweled YES  
Features present or indicated F-3 and F-14

Floor & wall feature forms properly filled out YES  
Nature of matrix BANDS OF UNCONSOLIDATED WHITE TO GRAY AND BLACK  
DEPOSITS TO CONSOLIDATED ORANGE & BLACK DEPOSITS Sample taken Yes  
Artifacts recovered: (CN = catalog number, D = description)

CN <u>8</u>	D <u>CUP FRAGMENT</u>	CN _____	D _____
CN _____	D _____	CN _____	D _____
CN _____	D _____	CN _____	D _____
CN _____	D _____	CN _____	D _____
CN _____	D _____	CN _____	D _____
CN _____	D _____	CN _____	D _____
CN _____	D _____	CN _____	D _____

Debitage or debris collected SAMPLES OF FERRIC MATRIX  
DEPOSITED BY THERMAL WATERS IN COLLECTION POOL.

Debitage or debris not collected (indicate amounts) MUCH POORLY  
CONSOLIDATED ORANGE AND BLACK FERRIC TUFA IN OLD  
POOL BASIN

Debitage sacks (circle one) 1 (2) 3 4 5 6 7 8 9  
C-14 sample collected \_\_\_\_\_ Pollen <sup>soil</sup> sample taken Yes  
Flotation No Percentage of level \_\_\_\_\_ Photos taken Yes  
Excavators DICKSON, PATTERSON, & GRISSON

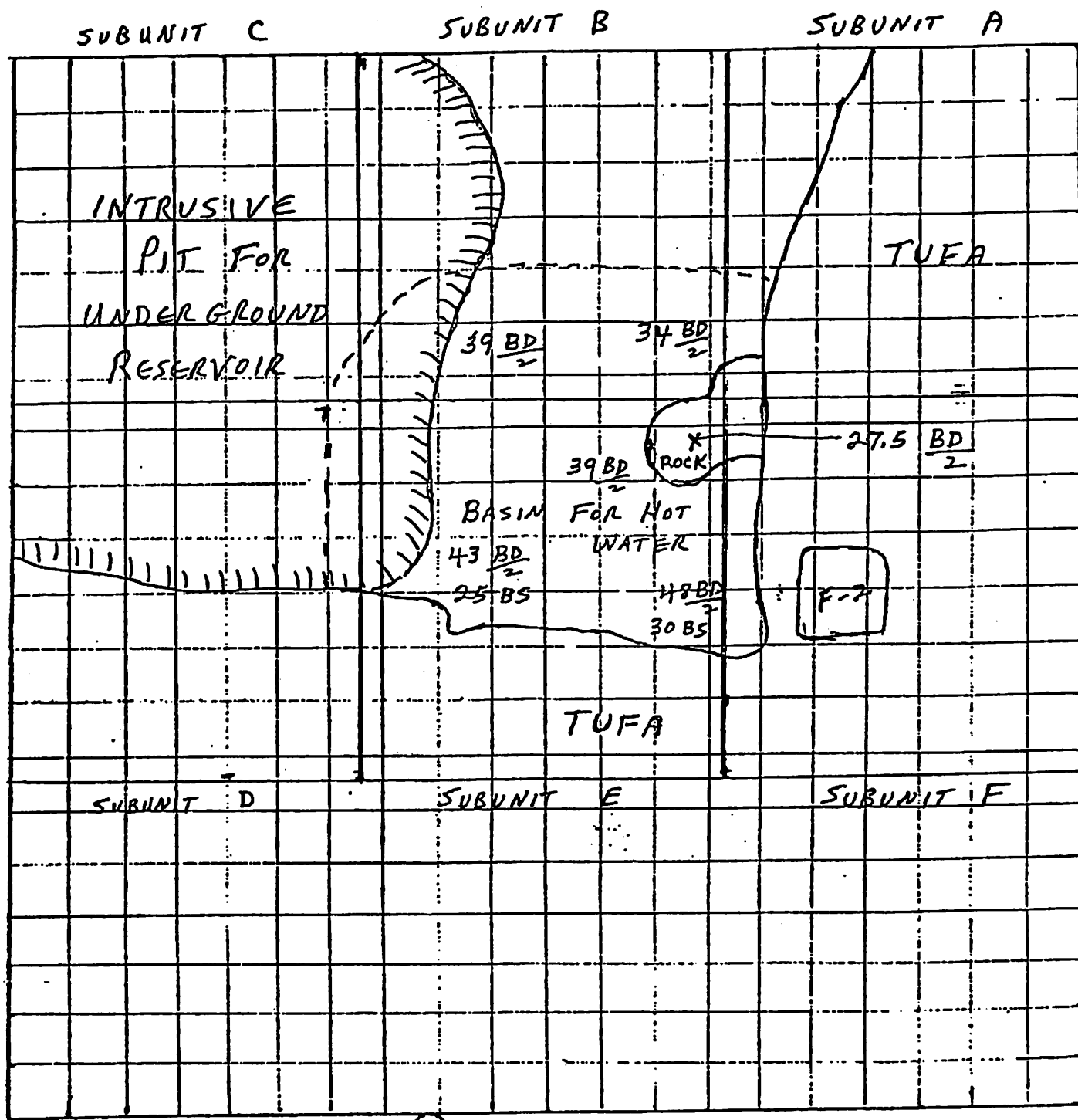
Remarks: FROM THE EAST MARGIN OF SUBUNITS B and  
A THE WATER-LOID DEPOSITS SLOPED DOWNWARD TO THE  
WEST. THEY WERE SOFT AND UNCONSOLIDATED UNTIL  
THEY REACHED THE COLLECTION POOL. MANY OLD BROKEN  
BRICKS and a FEW ROCKS ALONG SOUTH MARGIN OF  
INTRUSIVE PIT.

Floor sketch of level 2 at depth of VARIABLE (as shown  
SUB Unit size 5' Scale 9" Below)

Record continuation form used \_\_\_\_\_

EAST

NORTH



Recorded by Don R. Dickson Supervisor's approval \_\_\_\_\_

Ral SPRING EXCAVATION RECORD - FEATURE FORM # 5  
SITE or No. 14 FEATURE NUMBER 1 <sup>SUB</sup> UNITS D-E DATE 3-8-1983

NATURE AND DEFINITION OF FEATURE: TUEA FRAGMENTS, BROKE  
BRICKS, AND MORTAR in limited area.

MEASURED LOCATION WITHIN GRID: SEE BACK

MEASUREMENTS: MAXIMUM LENGTH 42" DIRECTION NW - SE  
MAXIMUM WIDTH 18" DIRECTION NE - SW  
DEPTH 15.5 TO 16" BD/2

STRATIGRAPHIC POSITION:  
JUST UNDER TOPSOIL 2" TO 4" BELOW SURFACE.

ASSOCIATED ARTIFACTS, OBJECTS OR FEATURES:

JUST NORTH OF INTRUSIVE PIT DUG BY  
MAINTENANCE TO PLANT A TREE

PHOTOGRAPH NUMBERS 1-3 MAP OR SKETCH SEE BACK.

DESCRIPTIVE NOTES AND REMARKS:

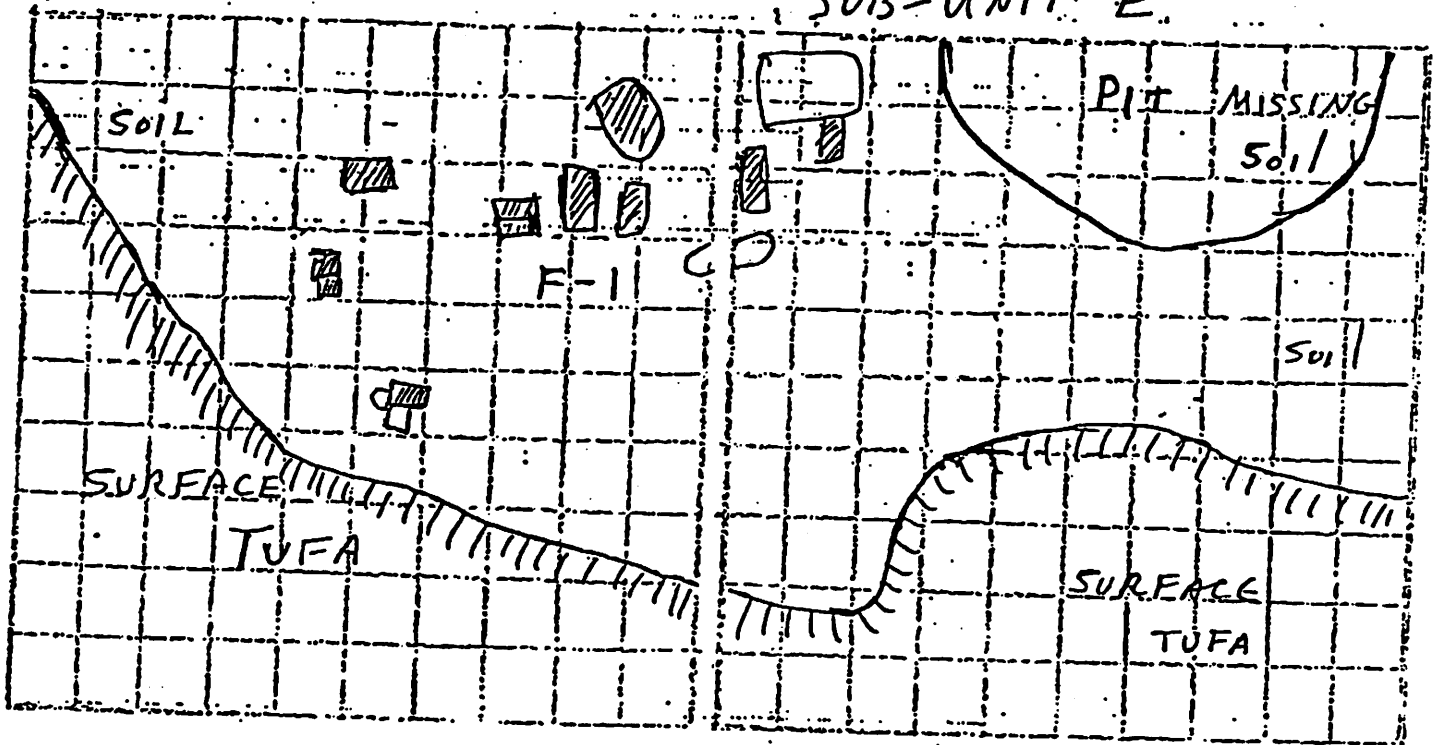
Judging FROM PHOTOS OF Ral SPRING  
WHEN IT WAS BEING USED, THESE BRICK  
FRAGMENTS MAY HAVE SERVED AS FOOTING  
FOR PLANKS AT THE NORTHWEST CORNER  
OF THE POOL.

EXPOSED BY Don R. Dickson RECORDED BY Don R. Dickson

↑  
EAST

SUB-UNIT D.

SUB-UNIT E



□ = Rock

▨ = BRICK FRAGMENT

RAI SPRING EXCAVATION RECORD - FEATURE FORM # 5  
SITE or No. 14 FEATURE NUMBER 2 SUB UNIT F DATE 3-9-1983  
NATURE AND DEFINITION OF FEATURE: SQUARE AREA OF half  
BRICKS AND SMALL STONES ORIGINALLY CEMENTED  
TOGETHER WITH A LIME MORTAR.  
MEASURED LOCATION WITHIN GRID: Center: 42" N. 18" W.

MEASUREMENTS: MAXIMUM LENGTH 16" DIRECTION N-S  
MAXIMUM WIDTH 16" DIRECTION E-W  
DEPTH 20-21" B/D 2 H-5" B.S.

STRATIGRAPHIC POSITION:

at BASE OF S-1 RESTING ON TUFA.

ASSOCIATED ARTIFACTS, OBJECTS OR FEATURES:

THREE SQUARE NAILS

PHOTOGRAPH NUMBERS 4, 6, 22 MAP OR SKETCH See back

DESCRIPTIVE NOTES AND REMARKS:

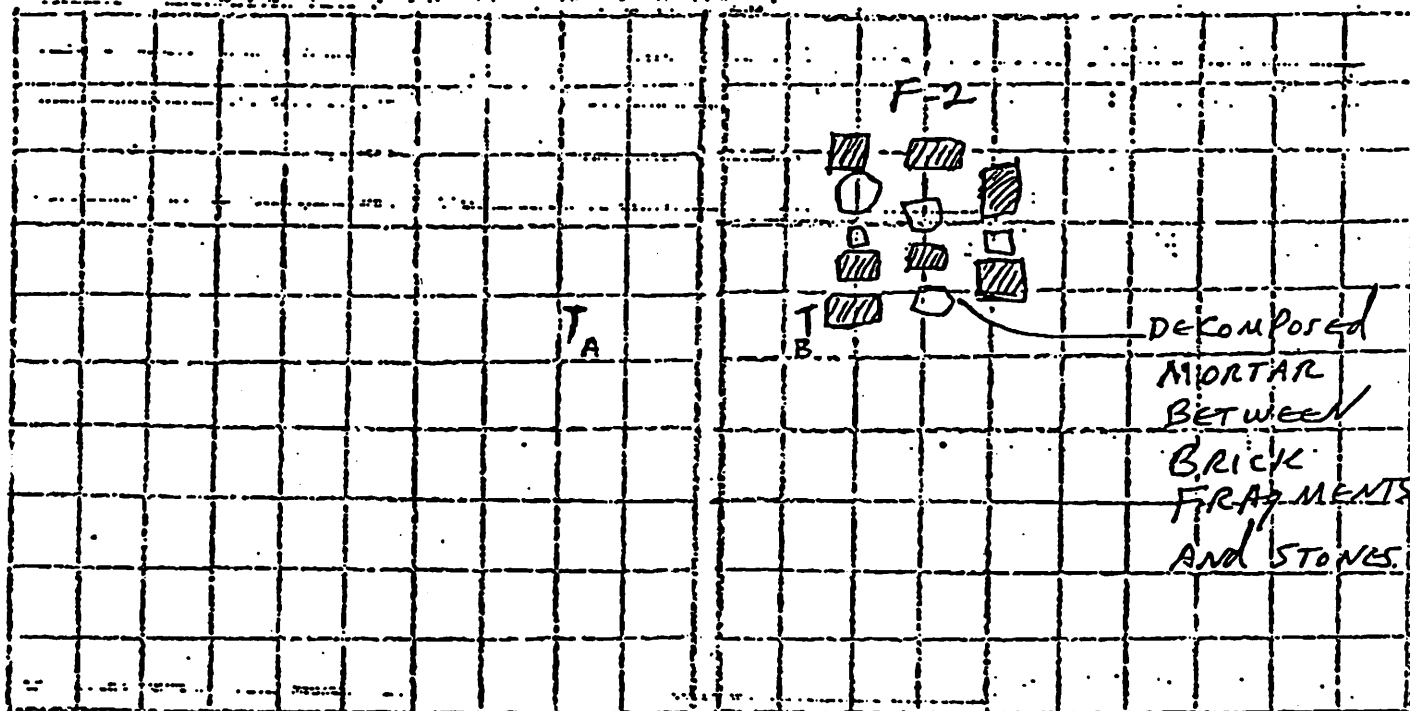
THIS FEATURE SEEMS TO BE A FOOTING FOR  
CORNERS OF PLANKS WHICH PEOPLE SAT UPON  
WHILE SOAKING FEET. SQUARE NAILS  
SUGGEST THESE PLANKS WERE NAILED TOGETHER.  
THE BENT TIP OF ONE NAIL SHOWS IT WAS  
DRIVEN INTO SOMETHING HARD, PROBABLY A  
BRICK HALF. THE POSITION OF NAIL B  
SUGGESTS THE PLANKS ROTTED IN PLACE.

EXPOSED BY Don R. Dickson RECORDED BY Don R. Dickson

↑  
EAST

SUBUNIT E

SUBUNIT F



□ = ROCK

▨ = BRICK

T = SQUARE NAIL    A = 21.5 BD/2    B = 20.5" BD/2

- Later Note: a Third SQUARE NAIL WAS FOUND DIRECTLY UNDER NAIL "B" and at 1 inch greater depth.

RAL SPRING EXCAVATION RECORD - FEATURE FORM # 5  
SITE OR No. 14 FEATURE NUMBER 3 SUB UNITS A-B DATE 3-9-198

NATURE AND DEFINITION OF FEATURE: AREA OF DARK BROWN  
TOPSOIL WHICH CONTRASTS STRONGLY WITH SURROUNDING  
MATRIX.

MEASURED LOCATION WITHIN GRID: See back

MEASUREMENTS: MAXIMUM LENGTH 17" DIRECTION N-S  
MAXIMUM WIDTH 16" DIRECTION E-W  
DEPTH 20 - 27.5 inches BD/2 H.5" BS

STRATIGRAPHIC POSITION:  
BOTTOM OF S-1 EXTENDING INTO S-2

ASSOCIATED ARTIFACTS, OBJECTS OR FEATURES:

MAINTENANCE'S TREE PLANTING PIT CUT  
AWAY THE UPPER PART OF THE NORTHWEST  
CORNER OF FEATURE

PHOTOGRAPH NUMBERS 7 + 8 MAP OR SKETCH See back.

DESCRIPTIVE NOTES AND REMARKS:

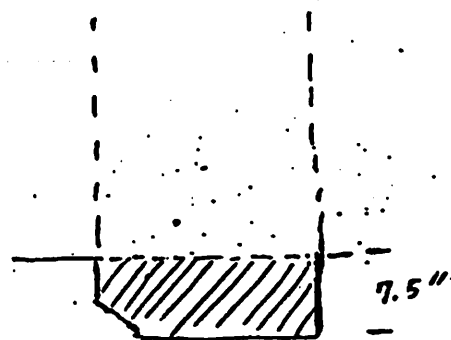
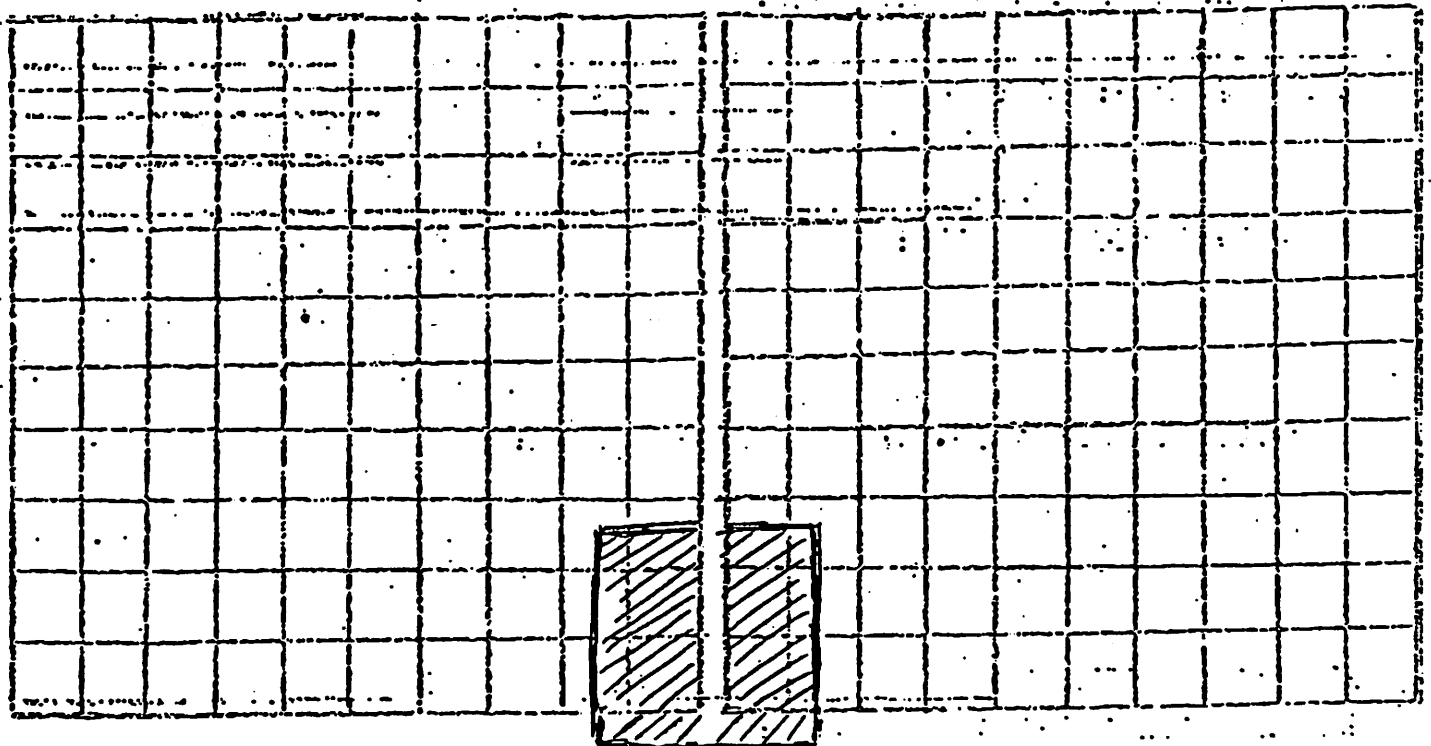
FEATURE IS ALMOST PERFECTLY SQUARE and  
7.5 inches deep. WHAT IS REPRESENTED  
IS UNKNOWN. NO ARTIFACTS WERE FOUND  
IN THE FEATURE. ONE OLD PHOTOGRAPH  
SHOWS A LADY SITTING UPON SOMETHING  
AT THIS POSITION. FEATURE IS MOSTLY IN  
SUBUNITS A and B, EXTENDING SLIGHTLY INTO  
SUBUNITS E AND F.

EXPOSED BY Don R. Dickson RECORDED BY Don R. Dickson

EAST

SUBUNIT B

SUBUNIT A



EAST-WEST CROSS SECTION  
OF FEATURE



# Rail SPRING EXCAVATION RECORD - FEATURE FORM

# 5

SITE No. 14 FEATURE NUMBER 4 <sup>SUB</sup> UNITS B-C DATE 3-10-1981

NATURE AND DEFINITION OF FEATURE: SEALED WATER  
STORAGE RESERVOIR

MEASURED LOCATION WITHIN GRID: See back

MEASUREMENTS: MAXIMUM LENGTH 26" DIRECTION N-S  
OF COVER MAXIMUM WIDTH 25.25" DIRECTION E-W  
DEPTH OF TOP: 18" BD/2 TOP OF IRON RING, 21"

STRATIGRAPHIC POSITION: BD/2 FOR CEMENT SLAB TOP.

TOP OF SLAB AT BASE OF S-1

ASSOCIATED ARTIFACTS, OBJECTS OR FEATURES:


MANY COMPLETE AND FRAGMENTARY BRICKS, and  
ONE SQUARE NAIL.

PHOTOGRAPH NUMBERS 9-12

MAP OR SKETCH

DESCRIPTIVE NOTES AND REMARKS:

See back on  
supplement sheet

A SEALED WATER STORAGE RESERVOIR MADE OF  
BRICKS WAS FOUND. A 19" TO 21" OPENING  
IN SUBUNIT C WAS SEALED WITH A  
25.25" X 26" CEMENT SLAB WITH AN  
IRON RING  IN THE TOP TO FACILITATE  
PLACEMENT AND REMOVAL. NO ONE IN  
THE PARK TODAY KNEW THE RESERVOIR  
WAS PRESENT AT THIS LOCATION.

EXPOSED BY

Don R. Dickson

RECORDED BY

Don R. Dickson

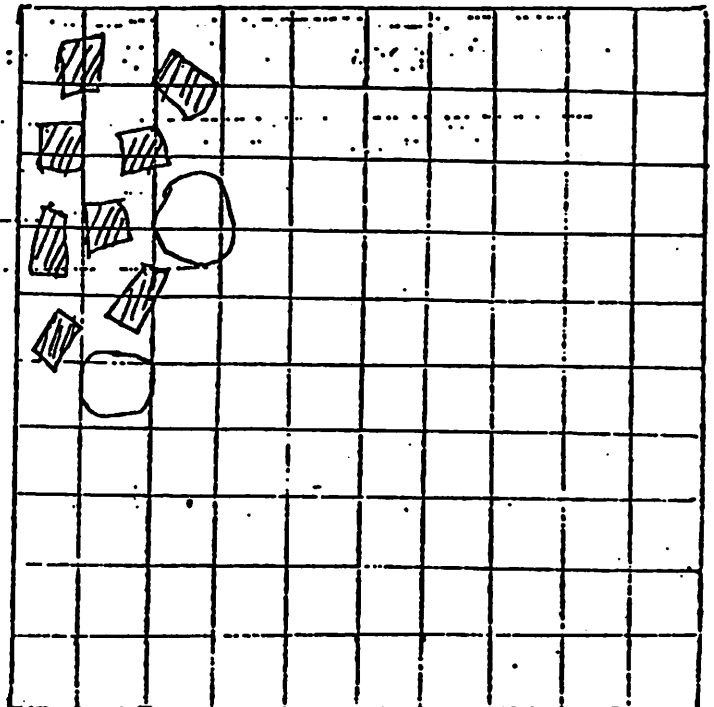
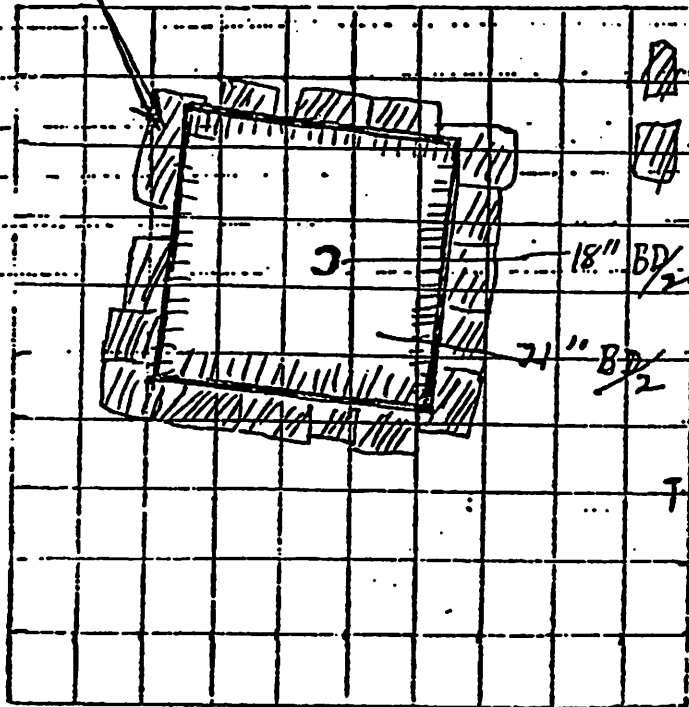
EAST

TOP OF BRICKS

25" BD  $\frac{1}{2}$

SUBUNIT C

SUBUNIT B



- = STONE  
▨ = BRICKS  
T = NAIL

BRICKS AND STONES IN  
SUBUNIT B AND IN THE  
SOUTH EDGE OF SUBUNIT  
C ARE IRREGULARLY  
PLACED OR PILED UP.